Ericsson contact point:
Sverker Magnusson
sverker.magnusson@ericsson.com

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Directorate-General for Communications Networks, Content and Technology
Electronic Communications Networks and Services
Radio Spectrum Policy Group
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Ericsson Response to the RSPG17-034 public consultation on

RADIO SPECTRUM POLICY GROUP
STRATEGIC SPECTRUM ROADMAP TOWARDS 5G FOR EUROPE
DRAFT RSPG Second Opinion on 5G networks

Dear Sir, Madam,

Ericsson welcomes the opportunity to respond to the RSPG consultation on the "DRAFT RSPG Second Opinion on 5G networks" and appreciates and supports the RSPG activities to provide a second opinion towards possible European leadership in deployment of 5G, while recognizing also the fast progress made by many countries and regions worldwide.

Ericsson would like to provide the following views on items 1 through 10 on pages 4 and 5 in the draft opinion:

1. The RSPG is of the opinion that Member States will need flexibility in the way they authorise access to spectrum, for example: appropriate geographical areas (e.g. national, regional, city or hyper-local, e.g. for use in a factory), individual licencing or under a general authorisation framework.

It is the view of Ericsson that although 5G spectrum will be used for a very diverse set of applications, there is a need to ensure an initial deployment of Mobile Network Operators with enough spectrum per operator and without geographical restrictions to provide the true 5G experience to consumers. This should apply to the three pioneer bands for Europe, i.e. 700 MHz, 3.4 – 3.8 GHz and the 26 GHz band, where it is noted that for the 26 GHz band the CEPT studies assume an individual licensing regime. This will further provide a certainty of investment that is essential for developing the 5G eco-system. As noted in the EC 5G Action Plan, network operators will not invest in new infrastructures unless the regulatory conditions make the investment worthwhile.

Flexibility may be introduced, but should not be applied indiscriminately to different frequency bands. For spectrum above 60 GHz, noting the current interest in 66 – 71 GHz, alternative licensing solutions may be considered, see further the response to item 10. In the context of deployments of networks in restricted geographical areas for e.g. industrial automation, it is observed that those may be supplied by MNOs, e.g. by network slicing, or by sub-licensing of MNO spectrum to enterprises, as also stated in the draft Second Opinion e.g. on page 7, paragraph 6. In the longer term, if the solutions above prove insufficient, dedicated spectrum may be considered as a solution for

restricted geographical areas of local character. Frequency bands should then be selected carefully so as not to interrupt the roll-out of 5G or limit the opportunities for the MNOs.

2. The RSPG is of the opinion that the Commission, together with Member States, should take actions to fully support 5G related policy objectives in rural areas and wide coverage, taking into account the role of satellite in achieving ubiquitous connectivity.

Ericsson concurs with RSPG that good 5G coverage, e.g. rural and deep indoor coverage, is of fundamental importance for the consumers, enterprises and organisation of Europe. However, it is our view that for Europe, such coverage is most efficiently provided by terrestrial networks in almost all areas, by using appropriate spectrum, e.g. 700 MHz. It is thus important to focus on making such spectrum available as soon as possible. Terrestrial microwave backhaul solutions and related spectrum is as well of importance to allow for 5G coverage in urban/sub-urban/rural areas and here the 71-76/81-86 GHz plays a vital role providing high date rates to mobile sites. Satellite solutions may then provide complementary coverage in rural areas with low population density, and for applications without high demands on latency or bitrates. It is noted that at this point in time the capabilities of a satellite component of 5G are not yet defined, and that similar proposals during 3G and 4G deployment have not met with success. Furthermore, it is of crucial importance that development of satellite solutions does not delay the terrestrial 5G deployment and that a level playing field is applied for terrestrial and satellite solutions, e.g. regarding spectrum costs.

3. The RSPG recommends that the Commission, in its research work-programs, study solutions for improving 5G connectivity and wide area coverage, especially in rural areas, thereby facilitating and progressing technology developments targeting the fulfilment of 5G related policy objectives.

It is the view of Ericsson that currently available technology provides the necessary capabilities for fulfilling connectivity and coverage objectives for 5G and this effort is now led by ITU and 3GPP in good cooperation, and that the focus should rather be on implementation aspects, e.g. by making sufficient amounts of spectrum available in a timely manner and at reasonable cost.

4. The RSPG is of the opinion that service performance and availability requirements may be relevant for some 5G cross border services to fully function and would need to be defined by the industry in a timely manner. In some cases an EU coordinated approach could be helpful in this regard to support a common European solution.

Whereas Ericsson appreciates the effort to avoid cross border issues, a clarification of this opinion would be appreciated. In particular, what additional performance is required from the industry in comparison with e.g. the recently approved 3GPP specification? It is the understanding of Ericsson that 5G technology in itself does not limit service performance and availability, but rather that it is a matter of proper implementation in concerned countries.

5. The RSPG is of the opinion that coverage obligations can only be derived as a consequence of national policy objectives and characteristics (i.e. population distribution, geographical morphology, industrial and societal needs) and therefore cannot be harmonised on a EU-level.

Although Ericsson agrees that the situation will vary considerably from one country and region to another, it is obvious that coverage is a very important aspect of 5G, as discussed above. It is noted that the EC Action Plan stresses that “all urban areas and major terrestrial transport paths have uninterrupted 5G coverage by 2025.” Ericsson thus urges the RSPG to emphasize the need for a commitment from administrations to ensure that such requirements are met in an appropriate manner, without resulting in requirements contrary to the business objectives of operators.

6. The RSPG notes that solving issues relating to facilitating the efficient deployment of ultra-dense networks is expected to be of high importance for the rollout of 5G in dense urban areas. The RSPG is of the opinion that Member States should assess the need for national actions that will enable easier site authorisation and installation, in particular for small cells, in order to make timely 5G deployment possible.

Ericsson supports the RSPG view that there is a need to facilitate deployment of 5G ultra-dense networks/small cells, noting that backhaul and fronthaul are crucial components of a 5G deployment. Ericsson would strongly stress the importance of wireless solutions, which in our view should be elevated to the same level of importance on pages 18 and 19 as fibre, as microwave is essential for flexibility and fast roll-out. Ericsson further suggests that additional text is introduced into item 6 to clarify the need for backhaul and fronthaul solutions with both wireless and fibre.

7. The RSPG is of the opinion that all commercial licences in frequency bands identified for 5G within the Member States should be subject to trading or leasing to enable new market opportunities.

Ericsson is in full agreement with RSPG on item number 7, and would further like to suggest that a use-it-or-lease-it clause can be considered for the licenses. Another important aspect of the licensing is to promote licensing schemes that discourage spectrum speculation and spectrum hoarding, as observed in A2.4.1.

8. The RSPG is of the opinion that Member States should consider appropriate measures to defragment the 3.6 GHz band, the primary 5G band, in time for authorising sufficiently large blocks of spectrum by 2020.

Ericsson is in full agreement with RSPG on item number 8, and considers the defragmentation of 3.4 – 3.8 GHz as one of the primary 5G bands a matter of fundamental importance for a timely 5G deployment in Europe by 2020. Ericsson suggests a clarification of this item saying that a desirable bandwidth per operator would be in the order of 100 MHz. Ericsson notes that some countries have already devised schemes where incumbents are relocated to other bands or within the band to make available sufficient contiguous spectrum for 5G and would encourage continued activities along those lines.

9. The RSPG is of the opinion that in relation to the 26 GHz pioneer band (24.25 - 27.5 GHz):

- the focus of 5G authorisations in the 26 GHz band should be on an individual licence regime. However, the possibility of a general authorisation regime under sharing conditions that protect the other users of spectrum in this band (e.g. EESS/SRS) is not excluded.
  Ericsson's view is that the 26 GHz band should be made available based on an individual licensing regime only, primarily for MNOs, and as an alternative for geographically restricted "local licensing", depending on timely availability of sufficient spectrum secured to the operators for 5G introduction and then considering the needs of IoT/verticals. A general authorisation in this band would jeopardize robustness and latency performance which are of high importance for the 5G pioneer bands and further risk undermining the willingness of licensees to invest in infrastructure.
- the Commission should include as part of any technical harmonisation for the 26 GHz band, in high level terms, the requirements to maintain the possibility for continued development of incumbent satellite services (FSS and EESS/SRS). Future earth stations should be authorised based on transparent, objective and proportionate criteria to safeguard their future operations and ensuring that they are unlikely to have a significant impact on 5G deployment and coverage. Member States will remain fully responsible for granting or rejecting authorisation to a new satellite earth station application.
  Ericsson suggests that to the extent possible future earth stations should use other frequency bands than 26 GHz, so as not to endanger or limit the deployment of 5G.

Whenever that is not possible, it is recommended to have deployment in rural areas where they can be protected without negatively influencing the 5G roll-out. These views are well reflected under item c) in A2.1.4.

- Member States should make by 2020 a sufficiently large portion of the band, e.g. 1 GHz, available for 5G in response to market demand, taking into account that 5G deployment in this frequency range is expected to be used for local coverage
  The view of Ericsson is that 1 GHz is insufficient to meet the full 5G requirements, and suggest that the baseline recommendation should be to make the entire band available, thus providing in the order of 1 GHz per operator. Only in cases where it is impossible to release the entire band should a restriction to e.g. 1 GHz be considered, and, when that is the case, harmonization should be sought by using the uppermost 1 GHz portion of the 26 GHz band. It is further to be noted that this two-step approach to releasing the 26 GHz spectrum may result in fragmentation of the band, and that measures should be taken to avoid this already during the first release. In addition, it should be observed that this is enabled by equipment that can cover the entire 3 GHz frequency range.
- Regulatory flexibility for the progressive release of the 26 GHz band will facilitate an efficient introduction of 5G without having an unnecessary negative impact on the current users of the band. Member States should plan any migration of fixed links necessary for ensuring the availability of the band for 5G, taking into account the geographical dimension of the market demand for 5G.
  Ericsson suggests that member states commence the planning of relocation of the fixed links immediately to free up the entire 26 GHz with as little delay as possible, considering the use of fixed links in the same environments, urban and sub-urban, as is expected for 5G in the 26 GHz band. Ericsson thus concurs with the observation in bullet 6 of A2.1.3 that “in the longer term, it is clear that 26 GHz will no longer provide a significant resource for the Fixed Service.” Alternative frequency bands should be specified as soon as possible, including 71 – 76 GHz/81 – 86 GHz, and possibly 32 GHz, as well as in the longer term also higher bands (e.g. W/D band).

10. The RSPG is of the opinion that general authorised frequency use can be an important breeding ground for innovation and contributes towards a dynamic market environment. The application of a general authorisation regime is foreseen in the 66-71 GHz band which could be an important band for 5G.

Ericsson’s view is that the entire band 66-71 GHz should be identified to IMT. This IMT Identification should be associated with a Resolution to clarify that the band could be used on a shared basis with both IMT technologies (meeting the IMT requirements as defined by ITU) and any other non-IMT technology. Additionally, different innovative licensing schemes should be studied by ITU when identified to IMT to propose to Member States various options for national decisions to use licensed (coordinated), local licenses (coordinated), LSA (coordinated), light-licensed (light-coordinated) or unlicensed (uncoordinated) schemes, considering propagation and interference situations, in various possible combinations of such licensing schemes, to allow for flexible use of the band and fitting the best purpose and need of each specific Member State.

In addition to the views on items 1 – 10 above, Ericsson would like to provide the following views on the emphasize the future need for additional frequency bands and propose that RSPG includes additional information on this in its second opinion:

- Additional coverage bands in the UHF range are needed below 700 MHz, which may be enabled by declining demand for terrestrial linear broadcasting television services in this range as well as a change in television consumer behaviour that is already ongoing. As is observed in A2.4.2, rural and sparsely populated areas rely on coverage from bands below 1 GHz, and thus additional spectrum in that range is necessary for enhancing MBB services in such areas.

- 40.5 – 43.5 GHz provides an opportunity for large bandwidths and appears to have fewer constraints than other bands in terms of incumbents.
- 3.8 – 4.2 GHz provides an excellent and important opportunity for extending the mid-range core band for 5G, in particular noting the current development in the U.S. for 3.7 – 4.2 GHz.

Concerning the statement on page 21 regarding specifications of 3GPP for spectrum below 4 GHz being ready only by 2020, this appears to be contradicted by the recent completion of NSA specifications, including bands below 4 GHz.

Ericsson welcomes a continued dialogue with RSPG regarding frequency bands for 5G in Europe.